Universidad Zaragoza

Academic Year/course: 2021/22

60979 - Deep learning

Syllabus Information

Academic Year: 2021/22
Subject: 60979 - Deep learning
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 623 - Master's Degree in Telecommunications Engineering
ECTS: 3.0
Year: 2
Semester: First semester
Subject Type: Optional
Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as Lectures (M1), practice sessions (M8), lab sessions (M9), mini-projects (M4), tutorials (M10), and assessment (M11).

4.2. Learning tasks

The course includes the following learning tasks:

A01 Lectures (18 hours). The teacher presents the theory and students participate actively. This methodology is designed to provide students with the theoretical aspects of the course and requires student's autonomous work.

A03 Lab sessions (8 hours). There will be 4 sessions of 2 hours. The students are provided with a series of problems to solve, which include the main blocks of a deep learning system, to consolidate the theoretical concepts from the lectures. This activity will take place in the laboratory or in remote sessions if the circumstances require it.

A05 Mini-project (20 hours). The students implement some of the theory concepts using a multimedia dataset. Then they write a report and make an oral presentation.

A07 Tutorials. Teacher's office hours to answers questions with the aim of reviewing and discussing the materials and topics presented in both lectures and practice sessions.

A08 Assessment. A set of reports, the project and the final test.

4.3. Syllabus

The course will address the following topics:

1. Deep neural network architectures and attention models
2. Secuence models and recurrent neural networks
3. Generative models: Autoencoders, GANs and normalizing flows

4. Self attention y transformers
5. Robust parameter estimation and Bayesian neural networks

4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the EINA website.

4.5. Bibliography and recommended resources

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=60979